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Atty. Dkt. No. 023971-0371

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellants: Junpei OGAWA et al.

Title: HIGH-STRENGTH CONNECTING ROD AND METHOD  
OF PRODUCING SAME

Appl. No.: 10/771,522

Filing Date:

Examiner: Vinh LUONG

Art Unit: 3682

Confirmation 3059  
Number:

**REPLY BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents  
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Sir:

Under the provisions of 37 CFR § 41.41, Appellants submit this Reply Brief on  
Appeal to respond to the Examiner's Answer mailed on November 14, 2006.

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**I. Rejections of Claims 19 and 21-25 Under 35 U.S.C. §112, First Paragraph**

**A. Is This A Rejection Based On The Written Description Requirement Or The Enablement Requirement?**

The Examiner's Answer suggests that the § 112, first paragraph rejections are, in fact, *enablement* rejections instead of *written description* requirement rejections. That is, the § 112, first paragraph rejections address enablement issues, even though the rejection is titled as a rejection based on the written description requirement, and in the Office Action from which Appellants appeal, the Examiner previously asserted that Appellants had not described claim 19 "in the specification in such a way as to reasonably convey to one skilled in the relevant art that the Applicants, at the time the application was filed, *had possession of the claimed invention*." (March 2005 Office Action, page 5, lines 8-10). Appellants believe this to be the case for the following reasons.

First, Appellants previously responded to the § 112, first paragraph rejections by pointing out that the written description requirement was satisfied because claims are substantively verbatim duplicates from the originally filed application and that the language of the claims corresponds to the language of the text.<sup>1</sup> In the Examiner's Answer, the Examiner now states that "the instant rejection under 35 USC 112, first paragraph, is based on a lack of adequate written description, *not new matter*. *The issue whether Appellant's claims were supported by the application as filed or not is not germane.*" (Examiner's Answer, page 4, lines 1-3, emphasis added.)

Because "the test for analysis of [written] description requirement and new matter issues is the same" (MPEP 2163.01, last sentence), and the Examiner specifically admits that the 112, first paragraph rejections do not pertain to "new matter," it seems clear to Appellants that the Examiner is not rejecting the claims based on the written description requirement. Moreover, because in only a very few cases has an originally filed claim been found not to

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<sup>1</sup> MPEP § 2163(I)(A), entitled "Original Claims," states that there "is a *strong presumption* that an adequate written description of the claimed invention is present when the application is filed." (Citing *In re Wertheim*, 541 F.2d 267, 263, 191 USPQ 90, 97 (CCPA 1976)).

meet the written description requirement,<sup>2</sup> it seems apparent that the Examiner has confused the written description requirement with the enablement requirement.

On page 6 of the Examiner's Answer, the Examiner appears to be referring to the enablement requirement when he states that the statute "requires Appellant to provide a full, clear, and concise, and exact terms in the description regarding the *manner* and the *process of making and using* of the lowest fatigue strength portion." (Answer, page 6, first paragraph.) This is language indicative of a rejection sounding in an alleged failure to meet the enablement requirement, not the written description requirement.

**B. Appellants Satisfy Both The Enablement Requirement And The Written Description Requirement.**

**1. The Written Description Requirement Is Satisfied.**

As detailed above MPEP § 2163(I)(A) and *In re Wertheim*<sup>3</sup> stipulate that there "is a strong presumption that an adequate written description of the claimed invention is present when the application is filed." Also as noted above, in only a very few cases has an originally filed claim been held to fail the written description requirement, and the Examiner has applied none of these principles to the facts at hand.

The Examiner has not met his burden to refute the strong presumption that there is adequate written description support for the claims.

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<sup>2</sup> Cases in the biotech arts relating to situations where there is such a high level of unpredictability in the art that it is considered impossible to constructively reduce an invention to practice, *i.e.*, to "possess" the invention before it is actually reduced to practice – not the case here.

<sup>3</sup> 541 F.2d 267, 263, 191 USPQ 90, 97 (CCPA 1976).

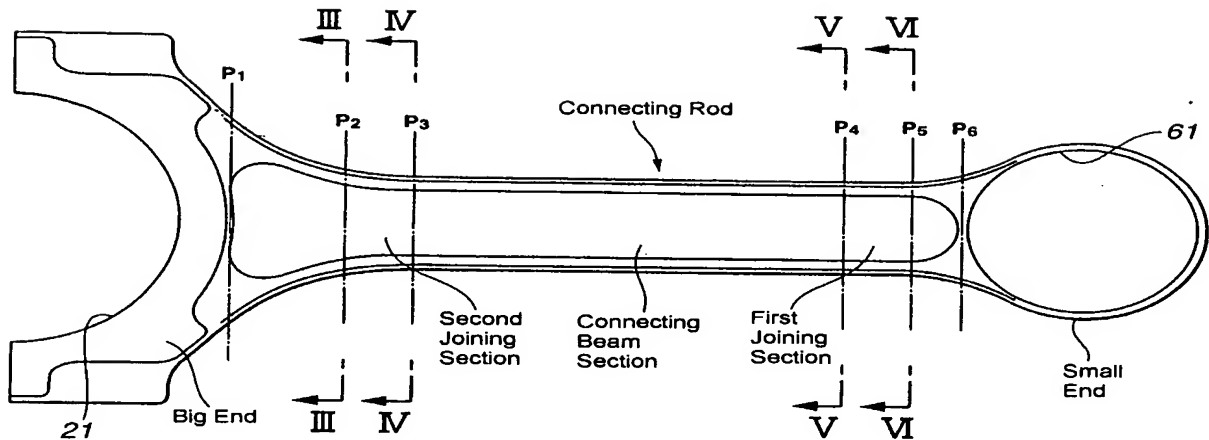
**2. The Enablement Requirement Is Satisfied.**

As with the written description requirement, the initial burden is on the examiner, when rejecting claims based on the enablement requirement, to establish a reasonable basis to question enablement. (MPEP§ 2164.04.) It has long been the rule that an examiner must provide a reasonable explanation as to why the scope of protection provided by a claim is not adequately enabled. *In re Wright*, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

Applicants respectfully submit that the statements in the Answer do not satisfy this burden. The mere statement that subject matter is not illustrated in the drawings is insufficient. For example, the enablement requirement may be satisfied without showing a single drawing, providing that the description is detailed enough.

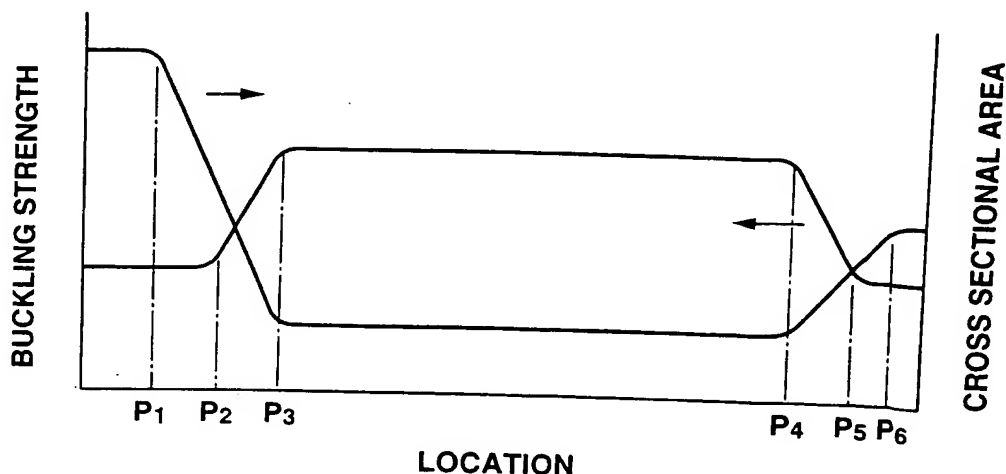
Appellants claim a connecting rod for an internal combustion engine, as is shown in the figure below, which is a reproduction of Fig. 1 of the application, except that the reference numerals have been replaced with the corresponding names from the

**FIG.1**



Specification (see pages 9 and 10 of the specification). The claimed connecting rod has (i) a lowest fatigue strength *portion* which is the lowest in fatigue strength that is present in at least one of the big and small ends of the connecting rod, and (ii) a variable fatigue strength *portion* which varies in fatigue strength that is present in each of the first and second joining sections and in the connecting beam section of the connecting rod. See also Fig. 7, which is reproduced below.

**FIG.7**



Further, Appellants provide a detailed and basically exhaustive explanation understandable by the skilled artisan, of how the skilled artisan may obtain a connecting rod as claimed in claim 19.

First, on pages 30-40, Appellants provide a number of examples detailing how connecting rods according to the claims are manufactured.

Second, Appellants detail on pages 12-14 of the specification that in an exemplary embodiment, the lowest variable fatigue strengths are obtained by varying the heat-treatment of selected portions of the connecting rod. By adjusting the fatigue strengths in relation to the cross sections, the force that the connecting rod may withstand may be increased in certain areas while also permitting certain sections of the connecting rod to be more easily machined because the metal is not heat-treated to the high strengths of other sections of the rod. For example, referring to Figs. 1 and 7 above and to the specification, the sections to the left of P<sub>1</sub> and to the right of P<sub>6</sub> are machined to interface with the crank shaft and the piston of the engine, so these are not heat-treated to high strength because they need to be machined. Conversely, the sections between P<sub>3</sub> and P<sub>4</sub> do not need to be machined, as they do not interface with a precision component, but are also sections of lower cross sectional area, and thus are heat-treated to a higher strength than the other sections. This way, a rod with relatively weaker ends (but also relatively easier to machine ends) and a relatively strong center (but also a relatively harder to machine center) is obtained.

Third, on pages 14-30, Appellants provide a very detailed description of processes which may be utilized to obtain the connecting rod of claim 19 (and its dependencies). These processes are very detailed, and clearly enable the skilled artisan to practice the present invention.

The Examiner asserts that Appellants' arguments regarding the section 102 rejections support his rejections of the claims under 112, first paragraph. As will be discussed in greater detail below, Appellants distinguish the claimed invention from the prior art on the basis that

it teaches neither the claimed structure nor the processes taught by Appellants that are used to obtain the claimed strength distributions. Appellants provide both a specific destination (the claimed “invention”) and a road map in their specification to enable the skilled artisan to obtain the claimed connecting rods. The prior art has neither, and therefore cannot possibly inherently result in a connecting rod having the claimed features.

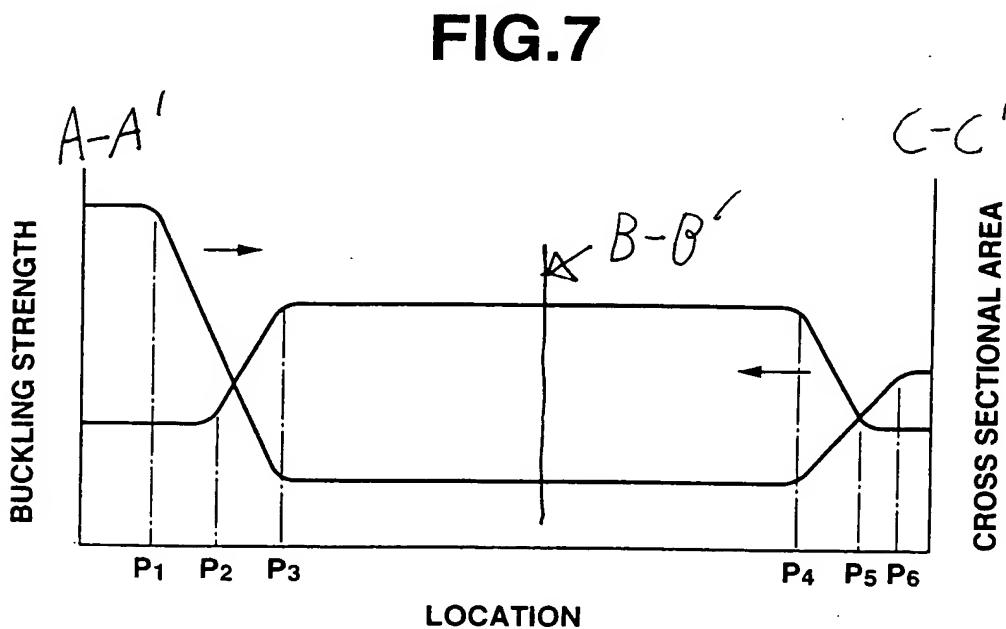
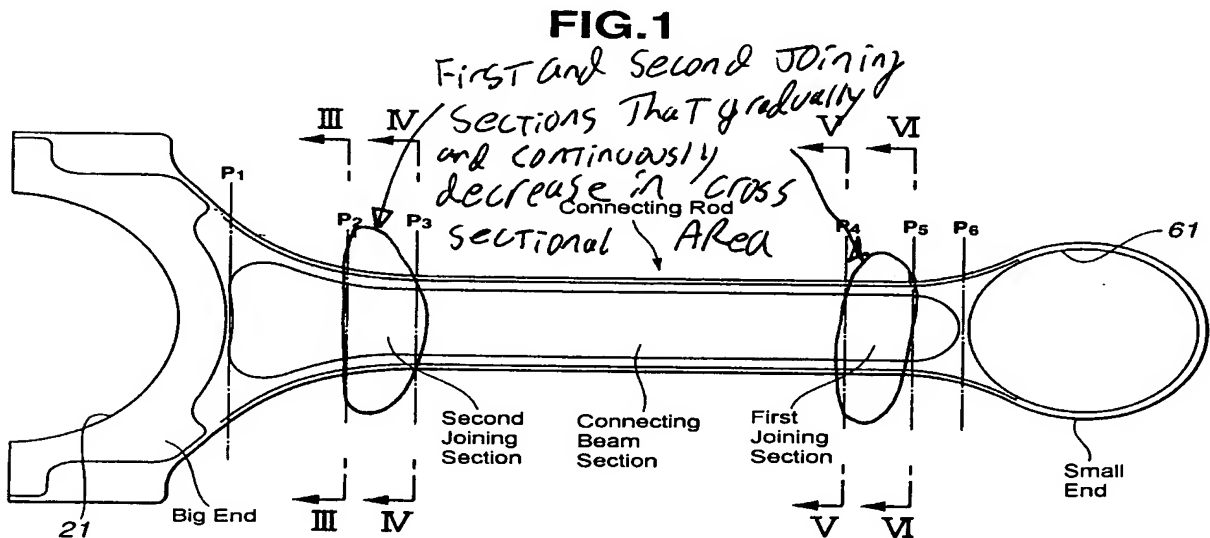
## **II. Rejections Under 35 U.S.C. § 102**

It is apparently not contested that Appellants' inventions are not expressly described by any of the cited references. Appellants submit that none of the cited references inherently produces the claimed inventions. The Examiner relies heavily on the incorrect assertion that because Appellants' arguments urging that the specification satisfies the requirements of 35 U.S.C § 112, first paragraph, are somehow inconsistent with Appellants' position that the prior art does not inherently result in the connecting rods as claimed. This is clearly wrong, as there is no inconsistency whatsoever. As explained above, the present application discloses a particular goal, plus a process for producing the product according to that goal. The prior art neither teaches the goal (the claimed invention) nor any process specific enough to necessarily result in the claimed product.

Claim 1 recites that "the first and second joining sections gradually and continuously decrease in cross sectional area toward the connecting beam section and has a strength distribution in which a strength increases with a decrease in the cross sectional area." Additionally, none of the cited references explicitly discloses this feature. The closest the PTO comes to pointing to an explicit teaching of this feature is the assertion that JP '317 teaches certain cross-sections that have higher hardnesses than other sections. However, none of the alleged cross sections of JP '317 (sections A-A', B-B' and C-C') is a section of a "joining section" that "gradually and continuously decreases in cross sectional area toward the connecting beam section." Section B-B' is right through the center of the connecting beam section of JP '317, and the geometry of the section appears to be uniform on either side of that section. Section A-A' is through a portion of JP '317 which at most corresponds to Appellants' claimed "big end located at a first end side of the connecting beam section," and section C-C' is through a portion of JP '371 which at most corresponds to Appellants' claimed "small end located at a second end side of the connecting beam section, the second end side being axially opposite the first end side." From the views presented in the figures of JP '317, it is impossible to tell if cross sections A-A' and C-C' are in portions with cross sections that gradually and continuously decrease in area as claimed.



Put another way, the portions of Appellants' connecting rod in which the claimed strength distribution in the first and second joining sections that gradually and continuously decrease in cross sectional area are between sections P2 and P3 and between sections P4 and P5 of Figs. 1 and 7 of the specification, again reproduced below. In contrast, the



corresponding portions of JP '317 cited by the Examiner would be located either through the connecting beam (B-B') or at the very ends of the graph of Fig. 7 (A-A' and C-C'), as depicted above.

Moreover, the cited hardnesses of JP '317 far from conclusively support a conclusion that there is any meaningful strength variation in the connecting rod of JP '317. The cited hardnesses vary, at most, over a range from 390-401 units, hardly a significant difference between the values. (The translation of JP '317 indicates at paragraph 0062 that a difference of 150 units is a great variation.) In fact, the measured values are indicative of a hardness distribution that does not vary – the differences being merely a result of manufacturing imperfections. Moreover, within the cited cross sections, the values overlap to the extent that every cited cross section has a measured hardness that is both higher than and lower than a measured hardness in one of the other cross sections.

In sum, in no way may one correlate the values presented in Fig. 12 of JP '317 to the claim recitations at hand, nor may one even correlate the claimed relationship to cross sectional area and strength to that of JP '317.

None of the cited references inherently disclose the features claimed in claim 1 regarding the relationship between cross sectional area and strength. Appellants achieve their claimed strength distribution by varying the heat treatment processes over the span of the rod, as is exhaustively detailed in the specification. This variable heat treatment process is necessary to achieve the claimed strength distributions.

In contrast, none of the cited references discloses so much as a variable heat treatment process, let alone a heat treatment process applied to a particular structural configuration as claimed and set forth in Appellant' specification. In fact, JP '317, which provides only one concrete example (which does not result in the features claimed), never teaches anything other than a uniform heat treatment process.

As Appellants previously detailed, the assertion that claim elements not explicitly taught are nonetheless inherent is an assertion that must be supported by sufficient evidence – evidence that clearly and unequivocally demonstrates that the missing elements are necessarily present (that is, they are always present, regardless of the circumstances in the prior art. No teaching of any of the references cited by the examiner is so speculative that it necessarily results in a connecting rod as claimed. Appellants' claimed strength distributions are not achieved by accident – they are achieved in part by purposefully varying a heat treatment process. The mere fact that a result may occur under certain circumstances (which Appellants' do not concede is the case) is not enough to reject a claim as anticipated through inherency.

As noted above, the PTO apparently bases much of its inherency argument on the fact that Appellants' argued that their teachings relating to heat treatment fulfill the first paragraph of section 112, asserting that somehow this is inconsistent with pointing out the deficiencies of the prior art with respect to the processes taught by Appellants to demonstrate that the prior art does not inherently result in the claimed features. There is nothing inconsistent with, on the one hand, arguing that a well written and detailed specification presents a road map to achieve a clearly disclosed and claimed invention, and on the other hand, arguing that prior art that does not teach either the concept of the invention or a processes that is detailed enough to achieve the claimed invention.

**III. Anticipation Rejections In View of Mrdjenovich And Haman – The Claims Are Not Product-By-Process Claims.**

As a preliminary matter, these references are even less pertinent to the claimed invention than JP '317. There is no specific disclosure of a process even remotely close to that taught by Appellants, and thus these references do not inherently teach the claimed features for at least the same reasons detailed above with respect to JP '317.

The Examiner's Answer to the Appeal Brief regarding the deficiencies of these two references is to allege, *for the first time*, that claim 1 is "*de facto* a product-by-process" claim in view of Appellants arguments' regarding heat-treatment, and that claim 1 has a "'wherein' clause that merely recites an inherent result of the process step 'heat-treatment'".

Specifically, to support his rejection of the claims in view of these references, the PTO basically alleges that the claims are product-by-process claims and that because the claimed connecting rod looks similar to that of the prior art, the prior art anticipates the claims. That is, the PTO glosses over the arguments that Appellants previously provided to differentiate the claims from the prior art by simply asserting that the claims are product-by-process claims, and that the prior art is indistinguishable from a product made by heat-treatment, thereby relieving the PTO of the need to perform the more burdensome analysis that is required of regular product claims.

First, the claims are not product-by-process claims. They affirmatively recite structure that the skilled artisan could evaluate by, for example, a destructive test of a connecting rod according to the present invention. While these features are indeed obtained by a process, the features themselves are structural.

Second, heat-treatment is not claimed in any of the independent claims. The only reason Appellants discuss heat-treatment is because the PTO has persistently pointed to the fact that the specification teaches that the strength distributions are obtained by heat-treatment in support of its inherency arguments. Again, the process taught by Appellants in their specification (which is not claimed in the rejected claims) is the sole basis used to support his inherency arguments.

Third, the Appellants refer to the above discussion regarding the lack of inherency of the claimed strength distribution in a reference that merely teaches heat-treatment. Thus, the mere fact that these references also teach heat treatment does not render the missing claim elements inherent in these references.

**IV. Refusal to Evaluate Claims 19 and 21-25 for Anticipation and Obviousness**

The Office Action of September, 2005, refuses to examine claims 19 and 21-25, which were rejected under 35 U.S.C. §112, first and second paragraphs, in view of the prior art. Appellants previously identified the error in this refusal in their Appeal Brief, but the Examiner completely ignored this portion of the Brief in his answer.

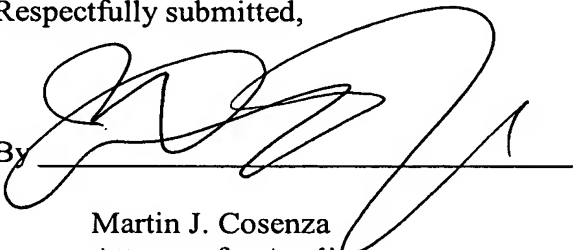
**V. Conclusion**

Accordingly, Appellants respectfully solicit the Honorable Board of Patent Appeals and Interferences to reverse the rejections of the pending claims and pass this application on to allowance.

Respectfully submitted,

Date Jan 16, 2007

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By   
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If Appellant has not accounted for any fees required by this Amendment, the Commissioner is hereby authorized to charge to Deposit Account No. 19-0741. If Applicants have not accounted for a required extension of time under 37 C.F.R. § 1.136, that extension is requested and the corresponding fee should be charged to our Deposit Account.